

What is claimed is:

1. An apparatus for sealing between a rotating shaft and a fixed housing, comprising:
  - a rotating seal having a first face, mounted for rotation with the shaft;
  - a non-rotating trapped seal ring having a second face sliding contact with the first sealed face and biased towards the first face by a spring;
  - a gland fixedly mounted to the housing so that the spring is located between the gland and the trapped seal ring; and
  - a ball disposed between the trapped seal ring and the gland and providing a lock against rotation so that the trapped seal ring remains rotationally fixed relative to the fixed gland.
2. The apparatus according to claim 1, wherein the gland further comprises a first indentation and the trapped seal ring further comprises a second indentation, and wherein the ball is trapped between the first and second indentations.
3. The apparatus according to claim 2, further comprising a port extending through the gland and permitting insertion of the ball from outside the gland into the region defined by the first and second indentations when the spring is compressed to a first degree.
4. An apparatus according to claim 3, wherein when the spring is compressed to the first degree, insertion of the ball is permitted, and when the spring is uncompressed so that the first face contacts the second face, degree

removal of the ball is prevented.

5. An apparatus according to claim 1, wherein the trapped seal ring is made from tungsten carbide.
6. A scraped surface heat exchanger apparatus comprising:
  - a rotating shaft;
  - a fixed housing;
  - a rotating seal having a first face, mounted for rotation with the shaft;
  - a non-rotating trapped seal ring having a second face in sliding contact with the first sealed face and biased towards the first sealed face by a spring;
  - a gland fixedly mounted to the housing so that the spring is located between the gland and the trapped seal ring; and
  - a ball disposed between the trapped seal ring and the gland and providing a lock against rotation so that the trapped seal ring remains rotationally fixed relative to the fixed gland.
7. The apparatus according to claim 6, wherein the gland further comprises a first indentation and the trapped seal ring further comprises a second indentation, and wherein the ball is trapped between the first and second indentations.
8. The apparatus according to claim 7, further comprising a port extending through the gland and permitting insertion of the ball from outside the gland into the region defined by the first and second indentations when the spring is compressed to a first degree.

9. An apparatus according to claim 8, wherein when the spring is compressed to the first degree, insertion of the ball is permitted, and when the spring is uncompressed so that the first face contacts the second face, removal of the ball is prevented.
10. An apparatus according to claim 5, wherein the trapped seal ring is made from tungsten carbide.
11. An apparatus for sealing between a rotating shaft and a fixed housing, comprising:
- a rotating sealing means having a first face mounted for rotation with the shaft;
  - a non-rotating sealing means trapped seal ring having a second face and sliding contact with the first face and biased towards the first face by a housing means;
  - a gland fixedly mounted to the housing so that the housing means is located between the gland and the trapped seal ring; and
  - locking means disposed between the trapped seal ring and the gland and providing a lock against rotation so that the trapped seal ring remains rotationally fixed relative to the fixed gland.
12. The apparatus according to claim 11, wherein the gland further comprises a first indentation and the trapped seal ring further comprises a second indentation, and wherein the locking means comprises a ball trapped between the

first and second indentations.

13. The apparatus according to claim 12, further comprising a port extending through the gland and permitting insertion of the ball from outside the gland into the region defined by the first and second indentations.

14. An apparatus according to claim 13, wherein when the spring is compressed, insertion of the ball is permitted, and when the spring is uncompressed to some degree removal of the ball is prevented.

15. An apparatus according to claim 11, wherein the trapped seal ring is made from tungsten carbide.

16. A method for a sealing between a rotating shaft and fixed housing, comprising:

    biasing a non-rotating seal face into sliding contact against a seal face rotating with the shaft using a spring; and

    locking the non-rotating seal face against rotation by insertion of a ball trapped between an indentation in a trapped seal ring and an indentation in a gland attached to the housing.

17. The apparatus according to claim 16, wherein a port extends through the gland to permit insertion of the ball from outside the gland into the region defined by the first and second indentations.

18. An apparatus according to claim 16, wherein when the spring is compressed, insertion of the ball is permitted, and when the spring is uncompressed to some degree removal of the ball is prevented.
19. A method for assembling a seal cartridge, comprising:  
inserting a spring into a gland;  
inserting a seal ring having an indentation into the gland; and  
inserting a ball through a port in the gland so that it becomes trapped by an indentation in the gland and an indentation in the seal ring;  
compressing the spring; and  
releasing the spring.
20. A method according to claim 20, wherein the spring is a wave spring.